



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/835,194	04/13/2001	Shigetsugu Okamoto	55807 (70904)	5343

7590

01/15/2003

EDWARDS & ANGELL, LLP  
P.O. BOX 9169  
BOSTON MA 02209

EXAMINER

SHAPIRO, LEONID

ART UNIT

PAPER NUMBER

2673

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/835,194

Applicant(s)

OKAMOTO ET AL.

Examiner

Leonid Shapiro

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-61 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Specification***

2. The disclosure is objected to because of the following informalities: On page 51, Lines 1 and 6, item 21 called "signal conversion circuit", in Fig.4, the same item 21 has different name "signal transfer circuit".

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1-6 rejected under 35 U.S.C. 102(b) as being anticipated by Lee (US 5,546,134).

As to claim 1, Lee teaches an image reproducing method for reproducing an image by a display apparatus having a plurality of pixels based on a picture signal including a pixel signal

Art Unit: 2673

representing information of each pixel, comprising the steps of: performing an operation to obtain an average signal level which is an average level of all the pixel signals (See Fig. 5, items 20,10, in description See Col. 4, Lines 67-68 and Col.5, Lines 1-11), then, setting an input signal - output brightness property which represents variations in brightness of a pixel with respect to the level of a pixel signal in accordance with the average signal level (See Fig.3, items y1,y2, in description See Col. 3, Lines 29-35); and reproducing an image so as to satisfy the input signal - output brightness property thus set (See Fig.4. items a, b, c, in description See Col.4, Lines 4-65).

As to claim 2, Lee teaches an image is reproduced so that an exponential value in which the input signal - output brightness property is approximately represented by an exponential function becomes larger as the average signal level increases (See Fig. 3-4, item y1, in description See Col. 3, Lines 30-31 and Col.4, Lines 4-9).

As to claim 3, Lee teaches when the pixel signal includes a brightness signal representing brightness information of each pixel, the average signal level is obtained by performing an operation to obtain an average level of all the brightness signals (See Fig. 5, item 20, in description See Col. 5, lines 4-6).

As to claim 4, Lee teaches in order to reproduce the image based on the picture signal including a brightness signal subject to compensation, the input signal - output brightness property which represents variations in brightness of a pixel with respect to the level of the brightness signal is set in accordance with the average signal level, and compensation is performed on the brightness signal so as to satisfy the input signal - output brightness property thus set (See Fig. 3-5, items y1,y2, in description See Col. 3, Lines 36-57).

Art Unit: 2673

As to claim 5, Lee teaches the image is reproduced by performing compensation on the picture signal so as to satisfy the input signal -output brightness property that is set, and outputting the picture signal subject to compensation to the display apparatus (See Fig. 3-5, items y1,y2, in description See Col. 3, Lines 36-57).

As to claim 6, Lee teaches the input signal - output brightness property is set by performing an operation to obtain an exponential value in which the input signal - output bright property is approximately represented by an exponential function, and compensation for the picture signal is made by performing compensation of the picture signal according to an input signal - output brightness property corresponding to the input signal - output brightness property that is set, thereafter compensating for deviation from a linear property of the input signal -output brightness property of the display apparatus (See Fig. 3-5, items y1,y2, in description See Col. 3, Lines 36-57).

4. Claim 16, 18, 38, 40 rejected under 35 U.S.C. 102(e) as being anticipated by Hosoi et al. (US Patent No. 6,278,436 B1).

As to claim 16, 38, Hosoi et al. teaches an image reproducing method for reproducing an image by a display apparatus having a plurality of pixels based on a picture signal including a pixel signal representing information of each pixel, wherein: an image is reproduced so that, after performing an operation to obtain an average signal level which is an average level of all the pixel signals, maximum output brightness of a pixel of the display apparatus varies in accordance with the average signal level (See Fig. 1-3, items 101-112, in description See Col.1, Lines 49-53 and Col. 7, Lines 47-68).

Art Unit: 2673

As to claim 18, 40 Hosoi et al. teaches the pixel signal includes a brightness signal representing brightness information of each pixel, the operation for the average signal level is made by performing an operation to obtain an average level of all the brightness signals (See Fig. 1, items 101-103, 105, in description See Col. 7, Lines 48-68).

5. Claims 22-26, 29-37, 42-46, 49-61 rejected under 35 U.S.C. 102(e) as being anticipated by Nishitani et al. (US Patent Application Publication No. 2001/0033260 A1).

As to claims 22, 42 Nishitani et al. teaches an image display apparatus which includes a display section having a plurality of pixels for displaying an image and receives a picture signal including a pixel signal representing information of each pixel, comprising: an average signal level operation section for performing an operation to obtain an average signal level which is an average level of all the pixel signals); an input signal - output brightness property setting section for setting an input signal - output brightness property which represents variations in brightness of a pixel with respect to a level of the pixel signal in accordance with the average signal level (See Fig. 1, item 2, in description See page 3, paragraph0059-00600; and a signal compensation section for performing compensation of a picture signal so as to satisfy the input signal - output brightness property thus set (See Fig. 1, item 3, in description See page 3, paragraph0059-00600).

As to claims 57-58, Nishitani et al. teaches an picture signal compensation device which receives a picture signal including a pixel signal representing information of each pixel, and performs compensation of the picture signal so as to output the pictures signal subject to compensation to a display apparatus having a plurality of pixels with; an average signal level

Art Unit: 2673

operation section for performing an operation to obtain an average signal level which is an average level of all the pixel signals (See Fig. 1, item 1, in description See page 3, paragraph 0059-0060) a maximum output brightness adjustment section for performing compensation of the picture signal so that maximum output brightness of a pixels of the display apparatus varies in accordance with the average signal level, compensation is performed on the picture signal so that the maximum output brightness adjustment section adjusts maximum output brightness so as to become smaller as the average signal level increases (See Fig. 27B, items S1-S7, 80, in description See page 13-14, paragraphs 00142-0145).

As to claims 23, 43 Nishitani et al. teaches the image is reproduced so that an exponential value in which the input signal - output brightness property is approximately represented by an exponential function becomes larger as the average signal level increases (See Fig. 27B, in description See page 14, paragraph 0144).

As to claims 24, 44, 54, 59 Nishitani et al. teaches the average signal level operation section performs an operation to obtain an average signal level which is an average level of all the brightness signals each of which is included in the picture signal to be inputted and represents brightness information of each pixel (See Fig.4, item 201, in description See page 5, paragraph 0073).

As to claims 25, 45 Nishitani et al. teaches the input signal - output brightness property setting section sets an input signal of brightness-output brightness property which represents variations in brightness of a pixel with respect to a level of the brightness signal in the pixel signal in accordance with the average signal level (See Fig. 5, items 47, 49-57, in description See page 6, paragraph 0078-0080); and the signal compensation section performs compensation of

Art Unit: 2673

the picture signal so as to satisfy the input signal of brightness – output brightness property thus set (See Fig. 7, items 59-60, in description See page 6, paragraph 0081).

As to claims 26, 46 Nishitani et al. teaches a delay section for delaying output of the pixel signal of the inputted picture signal to the signal compensation section by time required to perform the operation for the average signal level and to set the input signal - output brightness property (See Fig. 30, items 143-145, in description See page 14, paragraph 0151).

As to claims 29-30, 49-50, 55-56, 60-61 Nishitani et al. teaches the picture signal to be employed in the operation for the average signal level is a color video signal including a brightness signal which represents brightness information of each pixel and a chromaticity signal which represents chromaticity information of each pixel and the picture signal to be employed in the operation for the average signal level is a color video signal including color component signals of three or more primary colors (See Fig. 1-2, 32, items 6, 9, 10-12, 13-15, 160-161, in description See Page 4, paragraph 0063 and page 16, paragraph 0160).

As to claims 31, 51 Nishitani et al. teaches reproducing the image so that maximum output brightness of a pixel of the display apparatus varies in accordance with the average signal level (See Fig. 27B, in description See page 14, paragraph 0144).

As to claims 32, 52 Nishitani et al. teaches the image is reproduced so that the maximum output brightness becomes small' as the average signal level increases (See Fig. 27B, item 80, in description See page 14, paragraph 0144).

As to claim 33, 53 Nishitani et al. teach in order to reproduce the image, an operation to obtain the maximum output brightness of a pixel of the display apparatus is performed according to the average signal level, then, compensation is further performed on the picture signal subject



Art Unit: 2673

to the compensation according to the input signal - output brightness property that is set, based on a result of the operation for the maximum output brightness, and the picture signal subject to this compensation is outputted to the display apparatus (See Fig.26-27A-27B, items 80,83-84, 131 in description See page 14, paragraph 0143-0144).

As to claim 34, Nishitani teaches a display apparatus having an emission type optical switching element in which an emission element functions as an optical switching element as well (See page 1, paragraph 0002).

As to claim 35, Nishitani teaches the average signal level operation section performs an operation to obtain an average signal level which is an average level of all the brightness signals each of which is included in the picture signal to be inputted and represents brightness information of each pixel (See Fig.4, item 201, in description See page 5, paragraph 0073).

As to claims 36-37, Nishitani et al. teaches the picture signal to be employed in the operation for the average signal level is a color video signal including a brightness signal which represents brightness information of each pixel and a chromaticity signal which represents chromaticity information of each pixel and the picture signal to be employed in the operation for the average signal level is a color video signal including color component signals of three or more primary colors (See Fig. 1-2, 32, items 6, 9, 10-12, 13-15, 160-161, in description See Page 4, paragraph 0063 and page 16, paragraph 0160).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2673

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as  
aforementioned in claim 6 in view of Eglit (US Parent No. 5,734,362).

Lee does not show the compensation for deviation from the linear property of the input signal - output brightness property of the display apparatus is performed by converting the pixel signal by an inverse function of a function which represents the input signal - output brightness property of the display apparatus.

Eglit teaches the compensation for deviation from the linear property of the input signal - output brightness property of the display apparatus is performed by converting the pixel signal by an inverse function of a function which represents the input signal - output brightness property of the display apparatus (See Fig. 1A-1C, in description See Col. 1, Lines 46-52). It would have been obvious to one of ordinary skill in the art in the time of invention to use Eglit approach in the Lee method in order implement exponential gamma removal (See Col. 1, line 60 of the Eglit reference).

7. Claims 27-28, 47-48 rejected under 35 U.S.C. 103(a) as being unpatentable over  
Nishitani et al. as aforementioned in claim 22 in view of Eglit.

Nishitani et al. does not show the input signal - output brightness property setting section sets the input signal - output brightness property by performing an operation to obtain an exponential value in which the input signal - output brightness property is approximately represented by an exponential function, in accordance with the average signal level, and the

Art Unit: 2673

signal compensation section includes a first signal compensation for performing compensation of the pixel signal according to an input signal - output brightness property which corresponds to the input signal - output brightness property that is set, by an operation adopting the exponential value, and a second signal compensation section for performing compensation for deviation from a linear property of the input signal -output brightness property of the display section and the second signal compensation section converts the pixel signal by an inverse function of a function representing the input signal - output brightness property of the display section.

Eglit teaches the compensation for deviation from the linear property of the input signal - output brightness property of the display apparatus is performed by converting the pixel signal by an inverse function of a function which represents the input signal - output brightness property of the display apparatus (See Fig. 1A-1C, in description See Col. 1, Lines 46-52). It would have been obvious to one of ordinary skill in the art in the time of invention to use Eglit approach in the Nishitani et al. apparatus in order implement exponential gamma removal (See Col. 1, line 60 of the Eglit reference).

8. Claims 8-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as aforementioned in claim 1 in view of Nishitani et al.

As to claims 8-9, Lee does not teach the picture signal to be employed in the operation for the average signal level is a color video signal including a brightness signal which represents brightness information of each pixel and a chromaticity signal which represents chromaticity information of each pixel and the picture signal to be employed in the operation for the average

Art Unit: 2673

signal level is a color video signal including color component signals of three or more primary colors.

Nishitani et al. teaches the picture signal to be employed in the operation for the average signal level is a color video signal including a brightness signal which represents brightness information of each pixel and a chromaticity signal which represents chromaticity information of each pixel and the picture signal to be employed in the operation for the average signal level is a color video signal including color component signals of three or more primary colors (See Fig. 1-2, 32, items 6, 9, 10-12, 13-15, 160-161, in description See Page 4, paragraph 0063 and page 16, paragraph 0160). It would have been obvious to one of ordinary skill in the art in the time of invention to use Nishitani et al. approach in the Lee method in order to process and fabricate and display on display devices versatile video signals (See page 1, paragraph 0008 in the Nishitani et al reference).

As to claim 10, Lee does not teach reproducing the image so that maximum output brightness of a pixel of the display apparatus varies in accordance with the average signal level.

Nishitani et al. teaches reproducing the image so that maximum output brightness of a pixel of the display apparatus varies in accordance with the average signal level (See Fig. 27B, in description See page 14, paragraph 0144). It would have been obvious to one of ordinary skill in the art in the time of invention to use Nishitani et al. approach in the Lee method in order to process and fabricate and display on display devices versatile video signals (See page 1, paragraph 0008 in the Nishitani et al reference).

As to claim 11, Lee does not teach the image is reproduced so that the maximum output brightness becomes small' as the average signal level increases.

Art Unit: 2673

Nishitani et al. teaches the image is reproduced so that the maximum output brightness becomes small' as the average signal level increases (See Fig. 27B, item 80, in description See page 14, paragraph 0144). It would have been obvious to one of ordinary skill in the art in the time of invention to use Nishitani et al. approach in the Lee method in order to process and fabricate and display on display devices versatile video signals (See page 1, paragraph 0008 in the Nishitani et al reference).

As to claim 12, Lee does not teach in order to reproduce the image, an operation to obtain the maximum output brightness of a pixel of the display apparatus is performed according to the average signal level, then, compensation is further performed on the picture signal subject to the compensation according to the input signal - output brightness property that is set, based on a result of the operation for the maximum output brightness, and the picture signal subject to this compensation is outputted to the display apparatus.

Nishitani et al. teach in order to reproduce the image, an operation to obtain the maximum output brightness of a pixel of the display apparatus is performed according to the average signal level, then, compensation is further performed on the picture signal subject to the compensation according to the input signal - output brightness property that is set, based on a result of the operation for the maximum output brightness, and the picture signal subject to this compensation is outputted to the display apparatus (See Fig.26-27A-27B, items 80,83-84, 131 in description See page 14, paragraph 0143-0144). It would have been obvious to one of ordinary skill in the art in the time of invention to use Nishitani et al. approach in the Lee method in order to process and fabricate and display on display devices versatile video signals (See page 1, paragraph 0008 in the Nishitani et al reference).

Art Unit: 2673

As to claim 13, Nishitani teaches a display apparatus having an emission type optical switching element in which an emission element functions as an optical switching element as well (See page 1, paragraph 0002).

As to claim 14, Nishitani teaches the image is reproduced so that an exponential value in which the input signal - output brightness property is approximately represented by an exponential function becomes larger as the average signal level increases, and the maximum output brightness becomes smaller as the average signal level increases (See Fig. 27B, in description See page 14, paragraph 0144).

As to claim 15, Lee teaches when the pixel signal includes a brightness signal representing brightness information of each pixel, the average signal level is obtained by performing an operation to obtain an average level of all the brightness signals (See Fig. 5, item 20, in description See Col. 5, lines 4-6).

9. Claims 17, 19-21, 39, 41 rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoi et al. as aforementioned in claim 16 in view of Nishitani et al.

As to claims 17, 39, Hosoi et al. does not teach the image is reproduced so that the maximum output brightness becomes small as the average signal level increases.

Nishitani et al. teaches the image is reproduced so that the maximum output brightness becomes small' as the average signal level increases (See Fig. 27B, item 80, in description See page 14, paragraph 0144). It would have been obvious to one of ordinary skill in the art in the time of invention to use Nishitani et al. approach in the Hosoi et al apparatus in order to process

Art Unit: 2673

and fabricate and display on display devices versatile video signals (See page 1, paragraph 0008 in the Nishitani et al reference).

As to claims 19-20, Hosoi et al. does not teach the picture signal to be employed in the operation for the average signal level is a color video signal including a brightness signal which represents brightness information of each pixel and a chromaticity signal which represents chromaticity information of each pixel and the picture signal to be employed in the operation for the average signal level is a color video signal including color component signals of three or more primary colors.

Nishitani et al. teaches the picture signal to be employed in the operation for the average signal level is a color video signal including a brightness signal which represents brightness information of each pixel and a chromaticity signal which represents chromaticity information of each pixel and the picture signal to be employed in the operation for the average signal level is a color video signal including color component signals of three or more primary colors (See Fig. 1-2, 32, items 6, 9, 10-12, 13-15, 160-161, in description See Page 4, paragraph 0063 and page 16, paragraph 0160). It would have been obvious to one of ordinary skill in the art in the time of invention to use Nishitani et al. approach in the Hosoi et al. apparatus in order to process and fabricate and display on display devices versatile video signals (See page 1, paragraph 0008 in the Nishitani et al reference).

As to claim 21,41 Nishitani et al. teaches a display apparatus having an emission element and a non-emission type optical switching element, which is capable of separately controlling the emission element and the optical switching element (See Fig. 15, items 0121, 232, in description See page 8, paragraph 0101-0102).

*Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

The Callway (US Patent No. 6,075,574) reference discloses method and apparatus for controlling contrast of images.

The Morimura et al. (US Patent No. 5,760,843) reference discloses method and apparatus for contrast processing a video signal including brightness level compensation..

The Kanada et al. (US Patent No. 5,550,560) reference discloses image displaying apparatus.

The Ando et al. (US Patent No. 5,699,127) reference discloses automatic brightness limiter...

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.



Application/Control Number: 09/835,194

Page 16

Art Unit: 2673

Is

January 10, 2003



BIPIN SHALWALA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600